

What is already known on this topic

Systematic reviews of randomised controlled trials are an established way of efficiently summarising multiple studies to provide an easily accessible evidence base for making decisions about healthcare interventions

In recent years many journals have published systematic reviews on accuracy of diagnostic tests, but the quality and usefulness of these reviews has not been systematically assessed

What this study adds

The reliability and clinical relevance of published systematic reviews of diagnostic tests are compromised by poor review methods and poor reporting

Systematic reviews of diagnostic tests require improved reporting of detailed information about the design, conduct, and results of the included primary studies, as well as review methods, as will be required in the forthcoming Cochrane Reviews of Test Accuracy

Selection bias, however, was discussed in 14 reviews, 10 of which did not report or were unclear about the method of selection of patients. So, though many reviews discussed different types of bias, they did not always provide the information that would enable a reader to assess the risk of bias.

In our sample we found the quality of reviews completed for the purpose of clinical guidelines was poor, with worrying implications if these are the reviews guiding clinical practice. Reviews of diagnostic tests would be better carried out separately from the preparation of clinical guidelines.

Conclusions

Systematic reviews of diagnostic tests are complex and require reporting of detailed information about the design, conduct, and results of the included primary studies to ensure reviews are useful. We have shown the current poor quality of published reviews and indicated areas for improvement.

Contributors: See bmj.com.

Funding: SM, DGA, and VC are funded by Cancer Research UK. JJD is partially funded by a senior research fellowship in evidence synthesis from the UK Department of Health NCCRC (National Coordinating Centre for Research Capacity Development). SHo is funded from the NHS research and development programme.

Competing interests: None declared.

Ethical approval: Not required.

- Mulrow CD. Rationale for systematic reviews. *BMJ* 1994;309:597-9.
- Deeks JJ. Systematic reviews in health care: systematic reviews of evaluations of diagnostic and screening tests. *BMJ* 2001;323:157-62.
- Tatsioni A, Zarin DA, Aronson N, Samson DJ, Flamm CR, Schmid C, et al. Challenges in systematic reviews of diagnostic technologies. *Ann Intern Med* 2005;142:1048-55.
- Begg CB. Biases in the assessment of diagnostic tests. *Stat Med* 1987;6:411-23.
- Dinnes J, Deeks J, Kirby J, Roderick P. A methodological review of how heterogeneity has been examined in systematic reviews of diagnostic test accuracy. *Health Technol Assess* 2005;9:1-128.

- Lijmer JG, Mol BW, Heisterkamp S, Bossel GJ, Prins MH, van der Meulen JH, et al. Empirical evidence of design-related bias in studies of diagnostic tests. *JAMA* 1999;282:1061-6.
- Rutjes AW, Reitsma JB, Di Nisio M, Smidt N, van Rijn JC, Bossuyt PM. Evidence of bias and variation in diagnostic accuracy studies. *CMAJ* 2006;174:469-76.
- Irwig L, Tosteson AN, Gatsonis C, Lau J, Colditz G, Chalmers TC, et al. Guidelines for meta-analyses evaluating diagnostic tests. *Ann Intern Med* 1994;120:667-76.
- Whiting P, Rutjes AW, Dinnes J, Reitsma JB, Bossuyt PM, Kleijnen J. A systematic review finds that diagnostic reviews fail to incorporate quality despite available tools. *J Clin Epidemiol* 2005;58:1-12.
- Arroll B, Schechter MT, Sheps SB. The assessment of diagnostic tests: a comparison of medical literature in 1982 and 1985. *J Gen Intern Med* 1988;3:443-7.
- Sheps SB, Schechter MT. The assessment of diagnostic tests. A survey of current medical research. *JAMA* 1984;252:2418-22.
- Deville WL, Buntinx F, Bouter LM, Montori VM, de Vet HC, van der Windt DA, et al. Conducting systematic reviews of diagnostic studies: didactic guidelines. *BMC Med Res Methodol* 2002;2:9.
- Bossuyt PM, Reitsma JB, Bruns DE, Gatsonis CA, Glasziou PP, Irwig LM, et al. The STARD statement for reporting studies of diagnostic accuracy: explanation and elaboration. *Ann Intern Med* 2003;138:W1-12.
- Moher D, Cook DJ, Eastwood S, Olkin I, Rennie D, Stroup DF. Improving the quality of reports of meta-analyses of randomised controlled trials: the QUOROM statement. Quality of reporting of meta-analyses. *Lancet* 1999;354:1896-900.
- Whiting P, Rutjes AW, Reitsma JB, Bossuyt PM, Kleijnen J. The development of QUADAS: a tool for the quality assessment of studies of diagnostic accuracy included in systematic reviews. *BMC Med Res Methodol* 2003;3:25.
- Gould MK, Maclean CC, Kuschner WG, Rydzak CE, Owens DK. Accuracy of positron emission tomography for diagnosis of pulmonary nodules and mass lesions: a meta-analysis. *JAMA* 2001;285:914-24.
- Harris KM, Kelly S, Berry E, Hutton J, Roderick P, Cullingworth J, et al. Systematic review of endoscopic ultrasound in gastro-oesophageal cancer. *Health Technol Assess* 1998;2:1-134.
- Deeks J, Gatsonis C, Bossuyt P, Antes G. Cochrane reviews of diagnostic test accuracy. *Cochrane News* 2004;31:Aug 2004. www.cochrane.org/newslett/ccnews31-lowres.pdf (accessed 31 May 2006).

(Accepted 31 May 2006)

doi: 10.1136/bmj.38895.467130.55

Corrections and clarifications

Regulation and revalidation of doctors

Some readers might have been misled by the subtitle we added to this editorial by Mike Pringle (*BMJ* 2006;333:161-2, 22 Jul). The subtitle "England's chief medical officer's report should resolve the uncertainty" might suggest that the report (by Sir Liam Donaldson) related only to England. This is not the case. Professor Donaldson is indeed the chief medical officer for England, but the report (and the editorial) concerned medical regulation throughout the United Kingdom (the General Medical Council is the regulatory body and covers all UK countries). The same lack of clarity was evident in the first news article, by Andrew Cole, in the same issue (p 163).

Variant Creutzfeldt-Jakob disease: prion protein genotype analysis of positive appendix tissue samples from a retrospective prevalence study

An error in the electronic processing of this paper by James W Ironside and colleagues resulted in the second part of his email address being omitted (*BMJ* 2006;332:1186-8, 20 May). Correspondence about this paper should be emailed to james.ironside@ed.ac.uk.

A bipolar story

A technical editor's fumble fingered typing led to Raquel Duarte, the author of this filler (*BMJ* 2006;333:245, 29 Jul), being given an incorrect email address. Her correct address is s0126305@sms.ed.ac.uk.